WHAT IS CLAIMED IS:

1. A crystal of a core RNA polymerase (RNAP) that effectively diffracts X-rays for the determination of the atomic coordinates to a resolution of better than 3.5 Angstroms.

2. The crystal of Claim 1, wherein the core RNA polymerase is a bacterial core RNA polymerase.

3. The crystal of Claim 2, wherein the bacterial core RNA polymerase is a thermophilic bacterial core RNA polymerase.

4. The crystal of Claim 3, wherein the thermophilic bacterial core RNA polymerase is a *Thermus aquaticus* bacterial core RNA polymerase.

5. The crystal of Claim 1, wherein the core RNA polymerase comprises a β' subunit, a β subunit, and a pair of α subunits.

6. The crystal of Claim 5, further comprising an ω subunit.

7. The crystal of Claim 1 that effectively diffracts X-rays for the determination of the atomic coordinates of the core RNA polymerase to a resolution of 3.3 Angstroms or better.

8. The crystal of Claim 7 having space group of $P4_12_12$ and a unit cell of dimensions of a= b=201 and c= 294 Å.

9. A method of identifying an agent for use as an inhibitor of bacterial RNA polymerase using the crystal of Claim 1 or a dataset comprising the three-dimensional coordinates obtained from the crystal, comprising:

(a) selecting a potential agent by performing rational drug design with the three-dimensional coordinates determined from the crystal, wherein said selecting is performed in conjunction with computer modeling;

(b) contacting the potential agent with the bacterial RNA polymerase; and

(c) measuring the activity of the bacterial RNA polymerase; wherein a potential agent is identified as an agent that inhibits bacterial RNA polymerase when there is a decrease in the activity of the bacterial RNA polymerase.

10. The method of Claim 9, further comprising:

(d) growing a supplemental crystal containing the core RNA polymerase formed in the presence of the potential agent, wherein the crystal effectively diffracts X-rays for the determination of the atomic coordinates to a resolution of better than 5.0 Angstroms;

(e) determining the three-dimensional coordinates of the supplemental crystal with molecular replacement analysis; and

(f) selecting a second generation agent by performing rational drug design with the three-dimensional coordinates determined for the supplemental crystal, wherein said selecting is performed in conjunction with computer modeling.

11. The method of Claim 10, further comprising:

(g) contacting the second generation agent with a eukaryotic RNA polymerase; and

(h) measuring the activity of the eukaryotic RNA polymerase; wherein a potential agent is identified as an agent for use as an inhibitor of bacterial RNA polymerase when there is no change in the activity of the eukaryotic agent RNA polymerase.

12. A method of identifying an agent that inhibits bacterial growth using the crystal of Claim 1, or a dataset comprising the three-dimensional coordinates obtained from the crystal, comprising:

(a) selecting a potential agent by performing rational drug design with the three-dimensional coordinates determined for the crystal, wherein said selecting is performed in conjunction with computer modeling;

(b) contacting the potential agent with a bacterial culture; and

(c) measuring the growth of the bacterial culture; wherein a potential agent is identified as an agent that inhibits bacterial growth when there is a decrease in the growth of the bacterial culture.

13. The method of Claim 12, further comprising:

(d) growing a supplemental crystal containing the core RNA polymerase formed in the presence of the potential agent, wherein the crystal effectively diffracts X-rays for the determination of the atomic coordinates to a resolution of better than 5.0 Angstroms;

(e) determining the three-dimensional coordinates of the supplemental crystal with molecular replacement analysis; and

(f) selecting a second generation agent by performing rational drug design with the three-dimensional coordinates determined for the supplemental crystal, wherein said selecting is performed in conjunction with computer modeling.

14. The method of Claim 13, further comprising:

(g) contacting the second generation agent with a eukaryotic cell; and

(h) measuring the amount of proliferation of the eukaryotic cell; wherein a potential agent is identified as an agent for inhibiting bacterial growth when there is no change in the proliferation of the eukaryotic cell.

15. A method of identifying an agent for use as an inhibitor of bacterial RNA polymerase using the three-dimensional coordinates for the *Thermus aquaticus* core RNA polymerase comprising:

(a) selecting a potential agent by performing rational drug design with the three-dimensional coordinates determined for the *Thermus aquaticus* core RNA polymerase, wherein said selecting is performed in conjunction with computer modeling;

(b) contacting the potential agent with the bacterial RNA polymerase; and

(c) measuring the activity of the bacterial RNA polymerase; wherein a potential agent is identified as an agent that inhibits bacterial RNA polymerase when there is a decrease in the activity of the bacterial RNA polymerase.

16. The method of Claim 15, further comprising:

(d) growing a crystal containing a bacterial RNA polymerase formed in the presence of the potential agent, wherein the crystal effectively diffracts X-rays for the determination of the atomic coordinates to a resolution of better than 5.0 Angstroms;

(e) determining the three-dimensional coordinates of the crystal with molecular replacement analysis; and

(f) selecting a second generation agent by performing rational drug design with the three-dimensional coordinates determined for the crystal, wherein said selecting is performed in conjunction with computer modeling.

17. The method of Claim 16, further comprising:

(g) contacting the second generation agent with a eukaryotic RNA polymerase; and

(h) measuring the activity of the eukaryotic RNA polymerase; wherein a potential agent is identified as an agent for use as an inhibitor of bacterial RNA

polymerase when there is no change in the activity of the eukaryotic agent RNA polymerase.

18. A method of identifying an agent that inhibits bacterial growth using the three-dimensional coordinates obtained for the *Thermus aquaticus* core RNA polymerase, comprising:

(a) selecting a potential agent by performing rational drug design with the three-dimensional coordinates determined for the *Thermus aquaticus* core RNA polymerase, wherein said selecting is performed in conjunction with computer modeling;

(b) contacting the potential agent with a bacterial culture; and

(c) measuring the growth of the bacterial culture; wherein a potential agent is identified as an agent that inhibits bacterial growth when there is a decrease in the growth of the bacterial culture.

19. The method of Claim 18 further comprising:

(d) growing a crystal containing a bacterial RNA polymerase formed in the presence of the potential agent, wherein the crystal effectively diffracts X-rays for the determination of the atomic coordinates to a resolution of better than 5.0 Angstroms;

(e) determining the three-dimensional coordinates of the crystal with molecular replacement analysis; and

(f) selecting a second generation agent by performing rational drug design with the three-dimensional coordinates determined for the crystal, wherein said selecting is performed in conjunction with computer modeling.

20. The method of Claim 19, further comprising:

(g) contacting the second generation agent with a eukaryotic cell; and

(h) measuring the amount of proliferation of the eukaryotic cell; wherein a potential agent is identified as an agent for inhibiting bacterial growth when there is no change in the proliferation of the eukaryotic cell.

21. A method of obtaining a crystal of a core bacterial RNA polymerase comprising growing a core bacterial RNA polymerase crystal in a buffered solution containing 40-45% saturated ammonium sulfate.

22. The method of Claim 21 wherein said growing is performed by a method selected from the group consisting of batch crystallization, vapor diffusion, and microdialysis.